

REMARKS

Claims 1-5 are pending in the above-identified application, and Claims 6-7 have been withdrawn.

In the office Action, Claims 1-5 were rejected.

In this Amendment, Claims 1 and 4 are amended. No new matter has been introduced as a result of this amendment.

Accordingly, Claims 1- 5 remain at issue.

I. 35 U.S.C. § 102 Anticipation Rejection of Claims

Claims 4-5 were rejected under 35 U.S.C. § 102(b) as being anticipated by Admitted Prior Art (APA). Applicant respectfully traverses this rejection.

Claim 4 is directed to a semiconductor device. The semiconductor device comprises a substrate, a first insulation film, a first conductive layer, a second conductive layer, a second insulation film, a third conductive layer.

Claim 4 recites that a second insulation film formed on upper surfaces of the first conductive layer and the second conductive layer and having a plurality of opening portions to expose one end portion of the first conductive layer or of the second conductive layer or the first insulation film. Additionally, Claim 4 recites that the second insulation film is formed by a low dielectric constant material having a lower Young's modulus than that of a SiO₂ film or a SiO₂ film containing fluorine.

In contrast, the APA discloses that the conventional second insulating films are formed of low dielectric constant materials such as a SiO₂ film or SiO₂ film containing fluorine, which the present claim expressly avoids. Thus, the APA teaches away from the claimed feature of the second insulating film.

Accordingly, Claim 4 is patentable over the APA, as is dependent Claim 5 for at least the same reasons. Accordingly, Applicants respectfully request that these 35 U.S.C. § 102 claim rejections be withdrawn.

II. 35 U.S.C. § 103 Obviousness Rejection of Claims

Claims 1-3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Admitted Prior Art (APA) in view of Watanabe et al. ("Watanabe") (U.S. Publication No. 2003/0116852).

Claim 1 has been amended in a similar fashion as Claim 4. Thus, claim 1 recites that the second insulation film is formed by a low dielectric constant material having a lower Young's modulus than that of a SiO₂ film or a SiO₂ film containing fluorine.

As stated above the APA fails to teach or suggest that the second insulating film is formed by a low dielectric constant material having a lower Young's modulus than that of a SiO₂ film or a SiO₂ film containing fluorine.

In addition, Watanabe states in Paragraph [0066] that (emphasis added):

"Then, a second insulating film 29 is formed on the substantially flat surface on which each surfaces of the first wiring 36 and the first insulating film 95 are continued. The first wiring 36 is covered with the second insulating film 29. The second insulating film 29 is constituted by laminating a lower insulating film 38 and an upper insulating film 28. These insulating films 38, 28 are also constituted by laminating various insulating films. For example, the lower insulating film 38 is constituted by laminating a silicon nitride film 37 (film thickness: about 50 nm) and a silicon oxide film 25 (film thickness: about 700 nm). Then, the upper insulating film 28 is formed by laminating a low-dielectric insulating film 26 (film thickness: about 250 nm) and a silicon oxide film 27 (film thickness: about 250 nm). Among these films, the low-dielectric insulating film 26 is made of the same material for the low-dielectric insulating film 23, such as SiLK."

and further in Paragraph [0067] that:

"Reference numeral 28a denotes a wiring trench. This wiring trench 28a is constructed by openings 26b, 27b formed in the low-dielectric insulating film 26 and the silicon oxide film 27 respectively. A via hole (connection hole) 38a extending from the wiring trench 28a to the first wiring 36 and a dummy via hole (dummy connection hole) 38b extending from the wiring trench 28a to a non-forming region of the first wiring 36 are formed in the lower insulating film 38. The via hole 38a and the dummy via hole 38b are constructed by openings 37a, 25a, which are formed in the silicon nitride film 37 and the silicon oxide film 25 respectively."

Thus, in Watanabe the lower insulating film 38, which surrounds the plugs (first openings) 32 and the dummy plug (second openings) 34, is constituted by a lamination a silicon nitride film 37 and a silicon oxide film 25, whose dielectric constant is same as or higher than that of a SiO₂ film or a SiO₂ film containing fluorine.

As such, Watanabe fails to teach or suggest that the insulating film 38 is formed by a low dielectric constant material having a lower Young's modulus than that of a SiO₂ film or a SiO₂ film containing fluorine.

Thus, none of these two cited references disclose all of the limitations of Claim 1. Moreover, no combination of these cited references fairly teaches or suggests the claimed feature of the second insulating film. Hence, Claim 1 is patentable over the cited references, as are dependent claims 2 and 3 for at least the same reasons.

Accordingly, Applicants respectfully request that these 35 U.S.C. § 103 claim rejections be withdrawn.

III. Conclusion

In view of the above amendments and remarks, Applicant submits that Claims 1 – 5 are clearly allowable over the cited prior art, and respectfully requests early and favorable notification to that effect.

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